

# SEQUENCE LISTING

<110> Rafalski, J. Antoni  
Cahoon, Rebecca E.  
Coughlan, Sean  
Miao, Guo-Hua

<120> PLANT VITAMIN E BIOSYNTHETIC ENZYMES

<130> BB1289

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<150> 60/110,781

<151> 1998-12-03

<160> 43

<170> Microsoft Office 97

<210> 1

<211> 792

<212> DNA

<213> Zea mays

<400> 1

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cactcatcat actgcacaaa atcaaatctc caggacattt aataattctg cacctcanat 720
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<210> 2

<211> 191

<212> PRT

<213> Zea mays

<400> 2

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Gly Leu Ser Asp Gln Val Thr Leu Gln Val Ala Asp Ala Leu Glu Gln
          20           25           30

Pro Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly
          35           40           45

Glu His Met Pro Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val
          50           55           60

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Ala Ala Pro Gly Gly Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn  
65 70 75 80

Leu Asp Pro Ser Glu Thr Ser Leu Lys Pro Asp Glu Leu Ser Leu Leu  
85 90 95

Arg Arg Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser  
100 105 110

Asp Tyr Val Asn Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Lys Thr  
115 120 125

Ala Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys  
130 135 140

Ser Ala Leu Thr Trp Lys Gly Phe Thr Ser Leu Leu Thr Thr Gly Trp  
145 150 155 160

Lys Thr Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Gln Gly Tyr  
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<210> 3  
<211> 521  
<212> DNA  
<213> Oryza sativa

<400> 3  
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gatgagctga atctcctgaa aaggatatgc gatgcatatt atctcccaga ctggtgctct 180  
ccttctgatt atgtcaaaat tgccgagtca ctgtctcttg aggatataag gacagctgat 240  
tggtcaagag aacgtcgccc caatccggnc tgcnggttat taaatnaagc aattgacatg 300  
gnaagggtta actttctcct ggctaagaan tgggtgggaa gacgattaag aagggtggaat 360  
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<211> 82  
<212> PRT  
<213> Oryza sativa

<400> 4  
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Pro Gly Ala Arg Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Glu  
20 25 30

Pro Ser Glu Glu Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys Arg  
35 40 45

Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr  
50 55 60

Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala Asp  
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Trp Ser

<210> 5  
<211> 592  
<212> DNA  
<213> Oryza sativa

<400> 5  
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<210> 6  
<211> 144  
<212> PRT  
<213> Oryza sativa

<400> 6  
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Arg Cys Thr Ser Arg His Leu Cys Ala Ser Ala Ser Pro Arg Ala Gly  
35 40 45  
Leu Cys Leu His His His Arg Arg Arg Arg Arg Ser Ser Arg Arg Thr  
50 55 60  
Lys Leu Ala Val Arg Ala Met Ala Pro Thr Leu Ser Ser Ser Ser Thr  
65 70 75 80  
Ala Ala Ala Ala Pro Pro Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr  
85 90 95  
Asp Glu Xaa Ser Gly Val Trp Glu Ser Ile Trp Gly Glu His Met His  
100 105 110  
His Gly Phe Tyr Asp Ala Gly Glu Gly Ala Ser Met Ser Asp His Arg  
115 120 125  
Arg Ala Pro Val Arg Met Ile Glu Asp Leu Ala Phe Ala Ala Ser Pro  
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<210> 7  
<211> 1331  
<212> DNA  
<213> Glycine max

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<400> 7
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ttcgggcatc ggcagcgagc tcggagagag gggagatagt attggagcag aagccgaaga 180
aggatgacaa gaagaagctg cagaagggaa tcgcagagtt ttacgacgag tcgtctggct 240
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tttcgctttc ggatcatcgt gctgctcaga tccgaatgat ccaagagtct cttcgctttg 360
cctctgtttc tgaggagcgt agtaaatggc ccaagagtat agttgatgtt ggggtgtggca 420
taggtggcag ctctagatac ctggccaaga aatttggagc aaccagtgtg ggcatactc 480
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ttggccctga cgaacaatcc ttacatccat gggagcaaga tctcttaaag aagatttgcg 780
atgcatatta cctccctgcc tgggtgctcaa cttctgatta tgtaagtgtg ctccaatccc 840
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tacaagaaaa tatcttttat atatataaat gattcaatca aattacttga tgaggattat 1200
gagtgaaaat gagaggacag tcatagaaac tttatcctac attccttcta tttccacttc 1260
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<210> 8
<211> 349
<212> PRT
<213> Glycine max

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<400> 8
Met Ala Thr Val Val Arg Ile Pro Thr Ile Ser Cys Ile His Ile His
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Thr Phe Arg Ser Gln Ser Pro Arg Thr Phe Ala Arg Ile Arg Val Gly
      20                25                30

Pro Arg Ser Trp Ala Pro Ile Arg Ala Ser Ala Ala Ser Ser Glu Arg
      35                40                45

Gly Glu Ile Val Leu Glu Gln Lys Pro Lys Lys Asp Asp Lys Lys Lys
      50                55                60

Leu Gln Lys Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Leu Trp
      65                70                75                80

Glu Asn Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Asp
      85                90                95

Ser Thr Val Ser Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile
      100                105                110

Gln Glu Ser Leu Arg Phe Ala Ser Val Ser Glu Glu Arg Ser Lys Trp
      115                120                125

Pro Lys Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg
      130                135                140

Tyr Leu Ala Lys Lys Phe Gly Ala Thr Ser Val Gly Ile Thr Leu Ser
      145                150                155                160

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Pro Val Gln Ala Gln Arg Ala Asn Ala Leu Ala Ala Ala Gln Gly Leu  
 165 170 175  
 Ala Asp Lys Val Ser Phe Gln Val Ala Asp Ala Leu Gln Gln Pro Phe  
 180 185 190  
 Ser Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His  
 195 200 205  
 Met Pro Asp Lys Ala Lys Phe Val Gly Glu Leu Ala Arg Val Ala Ala  
 210 215 220  
 Pro Gly Ala Ile Ile Ile Ile Val Thr Trp Cys His Arg Asp Leu Gly  
 225 230 235 240  
 Pro Asp Glu Gln Ser Leu His Pro Trp Glu Gln Asp Leu Leu Lys Lys  
 245 250 255  
 Ile Cys Asp Ala Tyr Tyr Leu Pro Ala Trp Cys Ser Thr Ser Asp Tyr  
 260 265 270  
 Val Lys Leu Leu Gln Ser Leu Ser Leu Gln Asp Ile Lys Ser Glu Asp  
 275 280 285  
 Trp Ser Arg Phe Val Ala Pro Phe Trp Pro Ala Val Ile Arg Ser Ala  
 290 295 300  
 Phe Thr Trp Lys Gly Leu Ser Ser Leu Leu Ser Ser Gly Lys Leu Gly  
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 Cys Lys Ser Tyr Val Thr Asp His Tyr Phe His Thr Arg  
 340 345

<210> 9  
 <211> 1011  
 <212> DNA  
 <213> Triticum aestivum

<400> 9  
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 aggcctcgc cttcgccgcc gtccccgacg atccgacaaa caaacccaaa acgattgttg 180  
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 aaggggttgt ccggacaagg ttctttccaa ttgctgatct ctgggagcaa ccatttctctg 360  
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<210> 10  
 <211> 293  
 <212> PRT  
 <213> Triticum aestivum

<400> 10  
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 20 25 30  
 Ala Gln Ile Arg Met Ile Glu Glu Ala Leu Ala Phe Ala Ala Val Pro  
 35 40 45  
 Asp Asp Pro Thr Asn Lys Pro Lys Thr Ile Val Asp Val Gly Cys Gly  
 50 55 60  
 Ile Gly Gly Ser Ser Arg Tyr Leu Gly Glu Gln Ile Trp Ser Thr Met  
 65 70 75 80  
 Leu Trp Asp His Ile Asp Pro Val Gln Ala Glu Arg Gly Asn Ala Leu  
 85 90 95  
 Ala Ala Ala Gln Gly Val Val Arg Thr Arg Phe Phe Pro Ile Ala Asp  
 100 105 110  
 Leu Trp Glu Gln Pro Phe Pro Gly Trp Ala Phe Asp Leu Val Xaa Xaa  
 115 120 125  
 Xaa Xaa Xaa Xaa Xaa His Met Pro Asn Lys Gln Lys Phe Val Ser Glu  
 130 135 140  
 Leu Ala Arg Val Ala Ala Pro Gly Ala Thr Ile Ile Ile Val Thr Trp  
 145 150 155 160  
 Cys His Arg Asn Leu Ala Pro Ser Glu Asp Ser Leu Lys Pro Asp Glu  
 165 170 175  
 Leu Asn Leu Leu Lys Lys Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp  
 180 185 190  
 Cys Ser Pro Ser Asp Tyr Val Lys Ile Ala Glu Ser Leu Ser Leu Glu  
 195 200 205  
 Asp Ile Lys Thr Ala Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro  
 210 215 220  
 Ala Val Ile Gln Ser Ala Leu Thr Trp Lys Gly Leu Thr Ser Leu Leu  
 225 230 235 240  
 Arg Ser Gly Trp Lys Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met  
 245 250 255  
 Ile Gln Gly Tyr Lys Lys Gly Leu Ile Lys Phe Lys His His His Leu  
 260 265 270  
 Pro Gln Thr Pro Ser Ser His Arg Arg Arg Thr Trp Arg Pro His Arg  
 275 280 285

Pro Arg Val Val Glu  
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<210> 11  
<211> 432  
<212> DNA  
<213> Oryza sativa

<400> 11  
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cctcctccgc tccgcctccg tcgcgttcct cttcaccgcc ccctacggcg gcgaccacgg 180  
cgtcggcgcg gacgcggcca ccaccgcctc catcccttcc ttctcccctt cttttctccc 240  
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gccgcggncc aa 432

<210> 12  
<211> 75  
<212> PRT  
<213> Oryza sativa

<400> 12  
His Val Glu Leu Trp Cys Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe  
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20 25 30  
Gly Asn Ser Ala His Ala Ser Leu Leu Leu Arg Ser Ala Ser Val Ala  
35 40 45  
Phe Leu Phe Thr Ala Pro Tyr Gly Gly Asp His Gly Val Gly Ala Asp  
50 55 60  
Ala Ala Thr Thr Ala Ser Ile Pro Ser Phe Ser  
65 70 75

<210> 13  
<211> 628  
<212> DNA  
<213> Oryza sativa

<400> 13  
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anttaggtca gagatngcn ganaaatt 628

<210> 14  
<211> 123

<212> PRT  
 <213> Oryza sativa

<400> 14

Tyr Gly Leu Arg Arg Phe Asp His Val Val Gly Asn Val Pro Glu Leu  
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Ala Pro Val Ala Ala Tyr Ile Ser Gly Phe Thr Gly Phe His Glu Phe  
 20 25 30

Ala Glu Phe Thr Ala Glu Asp Val Gly Thr Ala Glu Ser Gly Leu Asn  
 35 40 45

Ser Val Val Leu Ala Asn Asn Ala Glu Thr Val Leu Leu Pro Leu Asn  
 50 55 60

Glu Pro Val His Gly Thr Lys Arg Arg Ser Gln Ile Gln Thr Tyr Leu  
 65 70 75 80

Asp His His Gly Gly Pro Gly Val Gln His Ile Ala Leu Ala Ser Asp  
 85 90 95

Asp Val Leu Gly Thr Leu Xaa Glu Met Pro Gly Ala Ser Ala Trp Ala  
 100 105 110

Val Arg Phe Leu Gly Pro Pro Pro Thr Thr  
 115 120

<210> 15

<211> 1027

<212> DNA

<213> Glycine max

<400> 15

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gaagaagcca	nattgagnnc	gtatttngaa	cacaancnaa	aggtgcttgg	tgtgcagcaa	960
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acgtttg						1027

<210> 16

<211> 276

<212> PRT

<213> Glycine max



<400> 16  
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 Arg Thr Asn Pro Lys Ser Asp Arg Phe Gln Val Asn Arg Phe His His  
 35 40 45  
 Ile Glu Phe Trp Cys Thr Asp Ala Thr Asn Ala Ser Arg Arg Phe Ser  
 50 55 60  
 Trp Gly Leu Gly Met Pro Ile Val Ala Lys Ser Asp Leu Ser Thr Gly  
 65 70 75 80  
 Asn Gln Ile His Ala Ser Tyr Leu Leu Arg Ser Gly Asp Leu Ser Phe  
 85 90 95  
 Leu Phe Ser Ala Pro Tyr Ser Pro Ser Leu Ser Ala Gly Ser Ser Ala  
 100 105 110  
 Ala Ser Ser Ala Ser Ile Pro Ser Phe Asp Ala Ala Thr Cys Leu Ala  
 115 120 125  
 Phe Ala Ala Lys His Gly Phe Gly Val Arg Ala Ile Ala Leu Glu Val  
 130 135 140  
 Ala Asp Ala Glu Ala Ala Phe Ser Ala Ser Val Ala Lys Gly Ala Glu  
 145 150 155 160  
 Pro Ala Ser Pro Pro Val Leu Val Asp Asp Arg Thr Gly Phe Ala Glu  
 165 170 175  
 Val Arg Leu Tyr Gly Asp Val Val Leu Arg Tyr Val Ser Tyr Lys Asp  
 180 185 190  
 Ala Ala Pro Gln Ala Pro His Ala Asp Xaa Ser Arg Trp Phe Leu Pro  
 195 200 205  
 Gly Phe Glu Ala Ala Ala Ser Ser Ser Ser Phe Pro Glu Leu Asp Tyr  
 210 215 220  
 Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val Pro Glu Leu Ala  
 225 230 235 240  
 Pro Ala Val Arg Tyr Leu Lys Gly Phe Ser Gly Phe His Glu Phe Ala  
 245 250 255  
 Glu Phe Thr Ala Glu Asp Val Gly Thr Ser Glu Ser Gly Leu Asn Ser  
 260 265 270  
 Val Val Leu Ala  
 275  
 <210> 17  
 <211> 511  
 <212> DNA  
 <213> *Vernonia mesipifolia*

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<400> 17
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tgaagtcgat gacgccgaat tagctttctc cgtcagcgtc tctcacggcg ctaaaccctc 120
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ttcaccggat tccatgagtt cgccgaattc accgcggagg acgtcgggac gagcgagagg 420
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<210> 18
<211> 170
<212> PRT
<213> Vernonia mesipifolia

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<400> 18
His Thr Asp Cys Arg Asn Phe Thr Ala Ser His Gly Leu Ala Val Arg
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Ala Ile Ala Ile Glu Val Asp Asp Ala Glu Leu Ala Phe Ser Val Ser
      20             25             30

Val Ser His Gly Ala Lys Pro Ser Ala Ala Pro Val Thr Leu Gly Asn
      35             40             45

Asn Asp Val Val Leu Ser Glu Val Lys Leu Tyr Gly Asp Val Ala Phe
      50             55             60

Arg Tyr Ile Ser Tyr Lys Asn Pro Asn Tyr Thr Ser Ser Phe Leu Pro
      65             70             75             80

Gly Phe Glu Pro Val Glu Lys Thr Ser Ser Phe Tyr Asp Leu Asp Tyr
      85             90             95

Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val Pro Glu Leu Ala
      100            105            110

Ser Ala Val Asp Tyr Val Lys Ser Phe Thr Gly Phe His Glu Phe Ala
      115            120            125

Glu Phe Thr Ala Glu Asp Val Gly Thr Ser Glu Arg Glu Leu Asn Ser
      130            135            140

Val Val Leu Ala Cys Asn Ser Glu Met Val Leu Ile Pro Met Asn Glu
      145            150            155            160

Pro Val Tyr Gly Xaa Lys Gly Arg Ala Arg
      165            170

```

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<210> 19
<211> 1165
<212> DNA
<213> Triticum aestivum

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<400> 19
caagaagcga acacacacca tgccgcccac ccccaccacc cccgcagcca ccggcgccgc 60
cgcggtgacg ccggagcacg cgcggccgcg ccgaatggtc cgcttcaacc cgcgcagcga 120
ccgcttcac acgctcgct tccaccacgt cgagttctgg tgcgcggacg ccgcctccgc 180
cgccggccgc ttgccttcg cgctcggcgc gccgctcgcc gccaggtccg acctctccac 240

```

```

ggggaactcc gtgcacgcct cccagctgct ccgctcgggc aacctcgctt tctctttcac 300
cgcgccctac gccaacggct gcgacgccgc caccgcctcc ctgccctcct tctccgccga 360
cgccgcgcgc cggttctccg cggaccacgc gctcgcggtg cgctccatag cgctgcgcgt 420
cgcgagacgc gccgaggcct tccgcgccag cgtcgacggg ggcgcgcgcc cggccttcag 480
ccccgtggac ctcgccgcgc gcttcggctt tgcggaggtc gagctctacg gcgacgtcgt 540
gctccgcttc gtcagcatcc ggacggnacg gacgtgcctt cttgccgggg ttccganggcg 600
ttgagcaacc ggggtgccgtg gactaanggc tgacacggnt tgacacgttg tccgnaagtc 660
cggagcttgc ttccggcgccg cctaacgtag ccggctnaac gggttcaana attcgccagt 720
taacacggag gacgtgggca cgcccgagag cgggctcaac tcgatggtgc tcgccaacaa 780
ctcggagggc gtgctgctgc cgctcaacga gccggtgcac ggcaccaagc gccggagcca 840
gatacagacg ttcctggaac accacggcgg ctcggggcgtg cagcacatcg cgggtggccag 900
cagcgacgtg ctcaggacgc tcaggagatg gcgtgcgcgc tccgccatgg gcggcttcga 960
cttctgcca ccccgctgc cgaagtacta cgaaggcgtg cggcgcatcg cgggggatgt 1020
gctctcggag gcgcaaatna aggaatgcaa gaactggggg tgctcntcca caaggaagaa 1080
caaagggtgt tgctacaaat cctcaacaag ccaatntggg acaagccgac ttgttcctgg 1140
agatattcac angatctggt gcatg 1165

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<210> 20

<211> 179

<212> PRT

<213> Triticum aestivum

<400> 20

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Met Pro Pro Thr Pro Thr Thr Pro Ala Ala Thr Gly Ala Ala Ala Val
 1              5              10              15

```

```

Thr Pro Glu His Ala Arg Pro Arg Arg Met Val Arg Phe Asn Pro Arg
          20              25              30

```

```

Ser Asp Arg Phe His Thr Leu Ala Phe His His Val Glu Phe Trp Cys
          35              40              45

```

```

Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala Leu Gly Ala
          50              55              60

```

```

Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser Val His Ala
          65              70              75              80

```

```

Ser Gln Leu Leu Arg Ser Gly Asn Leu Ala Phe Leu Phe Thr Ala Pro
          85              90              95

```

```

Tyr Ala Asn Gly Cys Asp Ala Ala Thr Ala Ser Leu Pro Ser Phe Ser
          100              105              110

```

```

Ala Asp Ala Ala Arg Arg Phe Ser Ala Asp His Gly Leu Ala Val Arg
          115              120              125

```

```

Ser Ile Ala Leu Arg Val Ala Asp Ala Ala Glu Ala Phe Arg Ala Ser
          130              135              140

```

```

Val Asp Gly Gly Ala Arg Pro Ala Phe Ser Pro Val Asp Leu Gly Arg
          145              150              155              160

```

```

Gly Phe Gly Phe Ala Glu Val Glu Leu Tyr Gly Asp Val Val Leu Arg
          165              170              175

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Phe Val Ser

<210> 21  
 <211> 1102  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> unsure  
 <222> (454)

<220>  
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<220>  
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<220>  
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 <222> (1100)

<400> 21  
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 cgcggcagyc actaccgcgc cccttcgcac gtcccgcgcc actcccgcgc tctccgacgc 120  
 gccgtcgtca gcctgcgtcc gatggcctcg tcgacggctc agggccccgc gacggcgccg 180  
 ccgggtctga aggagggcat cgcggggctg tacgacgagt cgtcggggct gtgggagaaac 240  
 atctggggcg accacatgca ccacggcttc tacgactcga gcgaggccgc ctccatggcc 300  
 gatcaccgcc gcgcccagat ccgcatgata gaggaggcgc tcgccttcgc cgggtgtccca 360  
 gcctcagatg atccagagaa gacacaaaaa acaatagtcg atgtcggatg tggcattggt 420  
 ggtagctcaa ggtacttggt gaagaaatac ggancgcagt gactgggat cactgtgagc 480  
 cctgttcaag ccgagagagg aaatgctctc gctgcagcgc aggggttgtc ggatcagggt 540  
 actctgcaag ttgctgatgc tctggagcaa ccgtttcctg acgggcagtt cgatctggtg 600  
 tgggccatgg agagtggcga gcacatgccg gacaagagaa agtttgtag tgagctagca 660  
 cgcgtggcgg ctccctggagg gacaataatc atcgtgacat ggtgccatag gaacctggat 720  
 ccatccgaaa cctcgctaaa gcccgatgaa ctgagcctcc tgaggaggat atgcgacgcg 780  
 tactacctcc cggactggtg ctcaacctca gactatgtga acattgccaa gtcactgtct 840  
 ctcgaggata tcaagacagc tgactggtcg gagaacgtgg ccccgttttg gcccgcctg 900  
 ataaaatcag cgctaacatg gaagggcttc acctctctgc tgacgaccgg atggaagacg 960  
 atcagaggcg cgatggtgat gccgctaata atccagggt acaagaagg gctcatcaaa 1020  
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 tcnttaactc tnacggaaan ct 1102

<210> 22  
 <211> 352  
 <212> PRT  
 <213> Zea mays

<220>  
 <221> UNSURE  
 <222> (152)

<400> 22  
 Met Ala His Ala Ala Leu Leu His Cys Ser Gln Ser Ser Arg Ser Leu  
 1 5 10 15

Ala Ala Cys Arg Arg Gly Ser His Tyr Arg Ala Pro Ser His Val Pro  
20 25 30  
Arg His Ser Arg Arg Leu Arg Arg Ala Val Val Ser Leu Arg Pro Met  
35 40 45  
Ala Ser Ser Thr Ala Gln Ala Pro Ala Thr Ala Pro Pro Gly Leu Lys  
50 55 60  
Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu Trp Glu Asn  
65 70 75 80  
Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Ser Glu Ala  
85 90 95  
Ala Ser Met Ala Asp His Arg Arg Ala Gln Ile Arg Met Ile Glu Glu  
100 105 110  
Ala Leu Ala Phe Ala Gly Val Pro Ala Ser Asp Asp Pro Glu Lys Thr  
115 120 125  
Pro Lys Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg  
130 135 140  
Tyr Leu Ala Lys Lys Tyr Gly Xaa Gln Cys Thr Gly Ile Thr Leu Ser  
145 150 155 160  
Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln Gly Leu  
165 170 175  
Ser Asp Gln Val Thr Leu Gln Val Ala Asp Ala Leu Glu Gln Pro Phe  
180 185 190  
Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His  
195 200 205  
Met Pro Asp Lys Arg Lys Phe Val Ser Glu Leu Ala Arg Val Ala Ala  
210 215 220  
Pro Gly Gly Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu Asp  
225 230 235 240  
Pro Ser Glu Thr Ser Leu Lys Pro Asp Glu Leu Ser Leu Leu Arg Arg  
245 250 255  
Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr  
260 265 270  
Val Asn Ile Ala Lys Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala Asp  
275 280 285  
Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Lys Ser Ala  
290 295 300  
Leu Thr Trp Lys Gly Phe Thr Ser Leu Leu Thr Thr Gly Trp Lys Thr  
305 310 315 320  
Ile Arg Gly Ala Met Val Met Pro Leu Met Ile Gln Gly Tyr Lys Lys  
325 330 335

Gly	Leu	Ile	Lys	Phe	Thr	Ile	Ile	Thr	Cys	Arg	Lys	Pro	Gly	Ala	Ala
			340					345					350		

<210> 23  
 <211> 521  
 <212> DNA  
 <213> Oryza sativa

<220>  
 <221> unsure  
 <222> (269)

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<220>  
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 ataatcattg tgacctggtg ccataggaac ctcgagccat ccgaagagtc cctgaaacct 120  
 gatgagctga atctcctgaa aaggatatgc gatgcatatt atctcccaga ctgggtgctct 180  
 ccttctgatt atgtcaaaat tgccgagtca ctgtctcttg aggatataag gacagctgat 240  
 tgggtcaagag aacgtcgccc caatccggnc tgcnggttat taaatnaagc aattgacatg 300  
 gnaaggggta actttctcct ggctaagaan tgggtgggaa gacgattaag aaggtggaat 360  
 ggggtgatgcc tccggatgat nnaaggntac aaagaaangg gtcaacaaat ttaacaanaa 420  
 caacctgtnc caaagncccg aaacaacgca ataatacccc antaatnaaa ttncgctcct 480  
 ggctaacctt ctccaacaac gaattaatgg aaanttctga c 521

<210> 24  
 <211> 172  
 <212> PRT  
 <213> Oryza sativa

<400> 24  
 Phe Arg His Gly His Ala Leu Ala Gln Pro Phe Pro Asp Gly Gln Phe  
 1 5 10 15  
 Asp Leu Val Trp Ser Met Glu Ser Asp Glu His Met Pro Asp Lys Arg  
 20 25 30  
 Gln Phe Val Ser Glu Leu Ala Arg Val Ala Ala Pro Gly Ala Arg Ile  
 35 40 45  
 Ile Ile Val Thr Trp Cys His Arg Asn Leu Glu Pro Ser Glu Glu Ser  
 50 55 60  
 Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys Arg Ile Cys Asp Ala Tyr  
 65 70 75 80  
 Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp Tyr Val Lys Ile Ala Glu  
 85 90 95  
 Ser Leu Ser Leu Glu Asp Ile Arg Thr Ala Asp Trp Ser Glu Asn Val  
 100 105 110  
 Ala Pro Phe Trp Pro Ala Val Ile Lys Ser Ala Leu Thr Trp Lys Gly  
 115 120 125  
 Leu Thr Ser Leu Leu Arg Ser Gly Trp Glu Thr Val Arg Gly Ala Met  
 130 135 140  
 Val Met Pro Leu Val Ile Glu Gly Tyr Lys Lys Gly Leu Ile Lys Phe  
 145 150 155 160  
 Pro Ile Ile Thr Cys Arg Lys Pro Glu Thr Thr Gln  
 165 170

<210> 25  
 <211> 464

<212> DNA  
 <213> Oryza sativa

<400> 25  
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 cgtcatctct gcgcctcggc ttcccctcgc gccggcctct gcctccacca ccaccgccgc 120  
 cgccgccgca gcagccggag gacgaaactc gccgtgcgcg cgatggcacc gacgttggtc 180  
 tcgtcgtcga cggcgccggc agtccccccg gggctgaagg agggcatcgc ggggctctac 240  
 gacgagtcgt ccggcgtgtg ggagagcatc tggggcgagc acatgcacca cggcttctac 300  
 gacgccggcg agggcgccctc catgtccgac caccgccgcg cccagatccg catgatcgag 360  
 gaatccctcg ccttcgccgc cgttccccga tgatgcgggt aacaaacca aaagtgttat 420  
 ttactgtttg gtgttgcaaa tgggggtacc tccaaaaaac ttg 464

<210> 26  
 <211> 128  
 <212> PRT  
 <213> Oryza sativa

<400> 26  
 Ala Arg Val Gln Pro Thr Gly Ala Leu Ala Pro Leu His Pro Leu Leu  
 1 5 10 15  
 Arg Cys Thr Ser Arg His Leu Cys Ala Ser Ala Ser Pro Arg Ala Gly  
 20 25 30  
 Leu Cys Leu His His His Arg Arg Arg Arg Ser Ser Arg Arg Thr  
 35 40 45  
 Lys Leu Ala Val Arg Ala Met Ala Pro Thr Leu Ser Ser Ser Ser Thr  
 50 55 60  
 Ala Ala Ala Ala Pro Pro Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr  
 65 70 75 80  
 Asp Glu Ser Ser Gly Val Trp Glu Ser Ile Trp Gly Glu His Met His  
 85 90 95  
 His Gly Phe Tyr Asp Ala Gly Glu Ala Ala Ser Met Ser Asp His Arg  
 100 105 110  
 Arg Ala Gln Ile Arg Met Ile Glu Glu Ser Leu Ala Phe Ala Ala Val  
 115 120 125

<210> 27  
 <211> 1189  
 <212> DNA  
 <213> Glycine max

<400> 27  
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 ttccaatcc cctcgcaactt tcgccagaat ccgggtcggc cccaggctcg gggctcctat 120  
 tcgggcatcg gcagcgagct cggagagagg ggagatagta ttggagcaga agccgaagaa 180  
 ggatgacaag aagaagctgc agaagggaat cgcagagttt tacgacgagt cgtctggctt 240  
 atgggagaac atttggggcg accacatgca ccatggcttt tatgactcgg attccactgt 300  
 ttcgctttcg gatcatcgtg ctgctcagat ccgaatgatc caagagtctc ttcgctttgc 360  
 ctctgtttct gaggagcgta gtaaattggcc caagagtata gttgatgttg ggtgtggcat 420  
 aggtggcagc tctagatacc tggccaagaa atttggagca accagtgtag gcatcactct 480  
 gagtctgtt caagctcaaa gagcaaatgc tcttgctgct gctcaaggat tggctgataa 540  
 ggtttccttt caggttgctg acgctctaca gcaaccattc tctgacggcc agtttgatct 600  
 ggtgtggtcc atggagagtg gagagcatat gcctgacaaa gctaagtttg ttggagagtt 660



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agctcgggta gcagcaccag gtgccattat aataatagta acatgggtgcc acaggggatct 720
tggccctgac gaacaatcct tacatccatg ggagcaagat ctcttaaaga agatttgcca 780
tgcatattac ctccctgcct ggtgctcaac ttctgattat gttaagttgc tccaatccct 840
gtcacttcag gacatcaagt cagaagattg gtctcgcttt gttgctccat tttggccagc 900
agtgatacgc tcagccttca catggaaggg tctatcttca ctcttgagca gtggacaaaa 960
aacgataaaa ggagcttttg ctatgccatt gatgatagag ggatacaaga aagatctaata 1020
taagtttgcc atcattacat gtcgaaaacc tgaataaatg gagaggcagg attactttta 1080
tagaatgaac caagtttcca acagggtcgtt tatttcgata gttgagaaac aagagaaaaa 1140
ataaatgaaa ggggttggtc gatttttaaaa aaaaaaaaaa aaaaaaaaaa 1189

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<210> 28
<211> 350
<212> PRT
<213> Glycine max

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<400> 28
Met Ala Thr Val Val Arg Ile Pro Thr Ile Ser Cys Ile His Ile His
  1              5              10              15

Thr Phe Arg Ser Gln Ser Pro Arg Thr Phe Ala Arg Ile Arg Val Gly
      20              25              30

Pro Arg Ser Trp Ala Pro Ile Arg Ala Ser Ala Ala Ser Ser Glu Arg
      35              40              45

Gly Glu Ile Val Leu Glu Gln Lys Pro Lys Lys Asp Asp Lys Lys Lys
  50              55              60

Leu Gln Lys Gly Ile Ala Glu Phe Tyr Asp Glu Ser Ser Gly Leu Trp
  65              70              75              80

Glu Asn Ile Trp Gly Asp His Met His His Gly Phe Tyr Asp Ser Asp
      85              90              95

Ser Thr Val Ser Leu Ser Asp His Arg Ala Ala Gln Ile Arg Met Ile
      100              105              110

Gln Glu Ser Leu Arg Phe Ala Ser Val Ser Glu Glu Arg Ser Lys Trp
  115              120              125

Pro Lys Ser Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg
  130              135              140

Tyr Leu Ala Lys Lys Phe Gly Ala Thr Ser Val Gly Ile Thr Leu Ser
  145              150              155              160

Pro Val Gln Ala Gln Arg Ala Asn Ala Leu Ala Ala Ala Gln Gly Leu
      165              170              175

Ala Asp Lys Val Ser Phe Gln Val Ala Asp Ala Leu Gln Gln Pro Phe
      180              185              190

Ser Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu His
      195              200              205

Met Pro Asp Lys Ala Lys Phe Val Gly Glu Leu Ala Arg Val Ala Ala
  210              215              220

Pro Gly Ala Ile Ile Ile Ile Val Thr Trp Cys His Arg Asp Leu Gly
  225              230              235              240

```

Pro	Asp	Glu	Gln	Ser 245	Leu	His	Pro	Trp	Glu 250	Gln	Asp	Leu	Leu	Lys 255	Lys
Ile	Cys	Asp	Ala 260	Tyr	Tyr	Leu	Pro	Ala 265	Trp	Cys	Ser	Thr	Ser 270	Asp	Tyr
Val	Lys	Leu 275	Leu	Gln	Ser	Leu	Ser 280	Leu	Gln	Asp	Ile	Lys 285	Ser	Glu	Asp
Trp	Ser 290	Arg	Phe	Val	Ala	Pro 295	Phe	Trp	Pro	Ala	Val 300	Ile	Arg	Ser	Ala
Phe 305	Thr	Trp	Lys	Gly	Leu 310	Ser	Ser	Leu	Leu	Ser 315	Ser	Gly	Gln	Lys	Thr 320
Ile	Lys	Gly	Ala	Leu 325	Ala	Met	Pro	Leu	Met 330	Ile	Glu	Gly	Tyr	Lys 335	Lys
Asp	Leu	Ile	Lys 340	Phe	Ala	Ile	Ile	Thr 345	Cys	Arg	Lys	Pro	Glu 350		

<212> PRT  
 <213> Triticum aestivum

<220>  
 <221> UNSURE  
 <222> (5)

<220>  
 <221> UNSURE  
 <222> (45)

<400> 30  
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 Asp Ala Ala Pro Pro Pro Arg Pro Ser Leu Gly His Ala Ala Arg Pro  
 20 25 30  
 Val Pro Arg Pro Val Leu Pro Leu Leu Pro Ala Arg Xaa Leu Arg Ala  
 35 40 45  
 Pro Asp Gly Val Val Asp Asp Arg Gly Pro Gly Asp Ala Ala Pro Pro  
 50 55 60  
 Gly Leu Lys Glu Gly Ile Ala Gly Leu Tyr Asp Glu Ser Ser Gly Leu  
 65 70 75 80  
 Trp Glu Ser Ile Trp Gly Glu His Met His His Gly Phe Tyr Asp Ser  
 85 90 95  
 Gly Glu Ala Ala Ser Met Ser Asp His Arg Arg Ala Gln Ile Arg Met  
 100 105 110  
 Ile Glu Glu Ala Leu Ala Phe Ala Ala Val Pro Asp Asp Pro Thr Asn  
 115 120 125  
 Lys Pro Lys Thr Ile Val Asp Val Gly Cys Gly Ile Gly Gly Ser Ser  
 130 135 140  
 Arg Tyr Leu Ala Asn Lys Tyr Gly Ala Gln Cys Ser Gly Ile Thr Leu  
 145 150 155 160  
 Ser Pro Val Gln Ala Glu Arg Gly Asn Ala Leu Ala Ala Ala Gln Gly  
 165 170 175  
 Leu Ser Asp Lys Ala Ser Phe Gln Val Ala Asp Ala Leu Glu Gln Pro  
 180 185 190  
 Phe Pro Asp Gly Gln Phe Asp Leu Val Trp Ser Met Glu Ser Gly Glu  
 195 200 205  
 His Met Pro Asn Lys Gln Lys Phe Val Ser Glu Leu Ala Arg Val Ala  
 210 215 220  
 Ala Pro Gly Ala Thr Ile Ile Ile Val Thr Trp Cys His Arg Asn Leu  
 225 230 235 240  
 Ala Pro Ser Glu Asp Ser Leu Lys Pro Asp Glu Leu Asn Leu Leu Lys  
 245 250 255

Lys Ile Cys Asp Ala Tyr Tyr Leu Pro Asp Trp Cys Ser Pro Ser Asp  
                   260                                  265                                  270  
 Tyr Val Lys Ile Ala Glu Ser Leu Ser Leu Glu Asp Ile Lys Thr Ala  
                   275                                  280                                  285  
 Asp Trp Ser Glu Asn Val Ala Pro Phe Trp Pro Ala Val Ile Gln Ser  
                   290                                  295                                  300  
 Ala Leu Thr Trp Lys Gly Leu Thr Ser Leu Leu Arg Ser Gly Trp Lys  
                   305                                  310                                  315                                  320  
 Thr Ile Lys Gly Ala Leu Val Met Pro Leu Met Ile Gln Gly Tyr Lys  
                                   325                                  330                                  335  
 Lys Gly Leu Ile Lys Phe Ser Ile Ile Thr Cys Arg Lys Pro Gln Ala  
                                   340                                  345                                  350  
 Ala Ile Glu Gly Glu Pro Glu Ala Ala Ser Pro Ser Val Glu  
                                   355                                  360                                  365

<210> 31  
 <211> 1605  
 <212> DNA  
 <213> Catalpa sp.

<400> 31  
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 caagcagacg accacttcog ccaccgccgc ggacgggtcc aaagatgcgc atgcagaatt 180  
 caagctggtg ggcttcaaga atttcgtcag gaccaacccc aagtccgacc acttctgcgt 240  
 ccaccgcttc caccatatag agttctggtg cggcgacgcc accaacaccg ccaagcgctt 300  
 ctcttggggc ctcggtatgc ccctcgtcgc caaatcggat ctttccactg gaaactccgc 360  
 tcatgcctcg tatcttcttc ggtctggcga actcaacttc ctcttcacga gcccttactc 420  
 tccttcaatc tccgccccct cctccgccgc catccccagt ttctccttct ccacctacca 480  
 gtcttttacc tcctcccatg gcctcgctgt tcgtgcggtg gctattcagg tcgattcggc 540  
 ttttcggct tactctgcct ccatttcccg cggcgccaaa cccgtgtccg caccgattct 600  
 ttatctgac aacaagactg ccattgcgga ggttcattta tatggagact cagtgttgcg 660  
 attcgtgagc tatggtgata atgggacagg ccagatgga tggttcttgc cgggctttga 720  
 gcctgtggat gatcagatgt cttataaaga attggattat gggattagaa ggctagatca 780  
 tgctgtagga aatgtgcccg aactcgggtc agttgtggat tacttgaaaa aattcacagg 840  
 gtttcatgaa tttgcagagt ttacttcaga ggatgtggga acagcagaaa gtggattgaa 900  
 ttctatggtt ttagcgaaca acaatgaaaa tgtgttggtta cctctgaacg aaccggtgtt 960  
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 gagtggagtt gggggattcg agttcatgcc ttgcctccg cttacttatt acaagaatct 1140  
 caagaacaga gctggagatg tgctgagggg tgagcagatt gaggagtgtg agaagtggg 1200  
 gatcttggtg gacagggatg atcaggggac tttgcttcag attttcacca agcctgtggg 1260  
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 agcgtcggcc tgagttctga gtccttcccta ctgtgttgta gatatgttga tgaaccaatg 1500  
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 cttaataata tatcgtactt tctataaaaa aaaaaaaaaa aaaaa 1605

<210> 32  
 <211> 445  
 <212> PRT  
 <213> Catalpa sp.

<400> 32

Met	Gly	Lys	Gln	Thr	Thr	Thr	Ser	Ala	Thr	Ala	Ala	Asp	Gly	Ser	Lys	1	5	10	15
Asp	Ala	His	Ala	Glu	Phe	Lys	Leu	Val	Gly	Phe	Lys	Asn	Phe	Val	Arg	20	25	30	
Thr	Asn	Pro	Lys	Ser	Asp	His	Phe	Cys	Val	His	Arg	Phe	His	His	Ile	35	40	45	
Glu	Phe	Trp	Cys	Gly	Asp	Ala	Thr	Asn	Thr	Ala	Lys	Arg	Phe	Ser	Trp	50	55	60	
Gly	Leu	Gly	Met	Pro	Leu	Val	Ala	Lys	Ser	Asp	Leu	Ser	Thr	Gly	Asn	65	70	75	80
Ser	Ala	His	Ala	Ser	Tyr	Leu	Leu	Arg	Ser	Gly	Glu	Leu	Asn	Phe	Leu	85	90	95	
Phe	Thr	Ser	Pro	Tyr	Ser	Pro	Ser	Ile	Ser	Ala	Pro	Ser	Ser	Ala	Ala	100	105	110	
Ile	Pro	Ser	Phe	Ser	Phe	Ser	Thr	Tyr	Gln	Ser	Phe	Thr	Ser	Ser	His	115	120	125	
Gly	Leu	Ala	Val	Arg	Ala	Val	Ala	Ile	Gln	Val	Asp	Ser	Ala	Phe	Ser	130	135	140	
Ala	Tyr	Ser	Ala	Ser	Ile	Ser	Arg	Gly	Ala	Lys	Pro	Val	Ser	Ala	Pro	145	150	155	160
Ile	Leu	Leu	Ser	Asp	Asn	Lys	Thr	Ala	Ile	Ala	Glu	Val	His	Leu	Tyr	165	170	175	
Gly	Asp	Ser	Val	Leu	Arg	Phe	Val	Ser	Tyr	Gly	Asp	Asn	Gly	Thr	Gly	180	185	190	
Pro	Asp	Gly	Trp	Phe	Leu	Pro	Gly	Phe	Glu	Pro	Val	Asp	Asp	Gln	Met	195	200	205	
Ser	Tyr	Lys	Glu	Leu	Asp	Tyr	Gly	Ile	Arg	Arg	Leu	Asp	His	Ala	Val	210	215	220	
Gly	Asn	Val	Pro	Glu	Leu	Gly	Pro	Val	Val	Asp	Tyr	Leu	Lys	Lys	Phe	225	230	235	240
Thr	Gly	Phe	His	Glu	Phe	Ala	Glu	Phe	Thr	Ser	Glu	Asp	Val	Gly	Thr	245	250	255	
Ala	Glu	Ser	Gly	Leu	Asn	Ser	Met	Val	Leu	Ala	Asn	Asn	Asn	Glu	Asn	260	265	270	
Val	Leu	Leu	Pro	Leu	Asn	Glu	Pro	Val	Phe	Gly	Thr	Lys	Arg	Lys	Ser	275	280	285	
Gln	Ile	Gln	Thr	Tyr	Leu	Glu	His	Asn	Glu	Gly	Pro	Gly	Val	Gln	His	290	295	300	
Leu	Ala	Leu	Val	Ser	Glu	Asp	Ile	Phe	Asn	Thr	Leu	Arg	Glu	Met	Arg	305	310	315	320



Val Pro Glu Leu Ala Pro Val Ala Ala Tyr Ile Ser Gly Phe Thr Gly  
                   20                  25                  30  
 Phe His Glu Phe Ala Glu Phe Thr Ala Glu Asp Val Gly Thr Ala Glu  
                   35                  40                  45  
 Ser Gly Leu Asn Ser Val Val Leu Ala Asn Asn Ala Glu Thr Val Leu  
           50                  55                  60  
 Leu Pro Leu Asn Glu Pro Val His Gly Thr Lys Arg Arg Ser Gln Ile  
       65                  70                  75                  80  
 Gln Thr Tyr Leu Asp His His Gly Gly Pro Gly Val Gln His Ile Ala  
                   85                  90                  95  
 Leu Ala Ser Asp Asp Val Leu Gly Thr Leu Arg Glu Met Arg Ala Arg  
                  100                 105                 110  
 Ser Ala Met Gly Gly Phe Glu Phe Leu Ala Pro Pro Pro Pro Asn Tyr  
           115                 120                 125  
 Tyr Asp Gly Val Arg Arg Arg Ala Gly Asp Val Leu Ser Glu Glu Gln  
       130                 135                 140  
 Ile Asn Glu Cys Gln Glu Leu Gly Val Leu Val Asp Arg Asp Asp Gln  
   145                 150                 155                 160  
 Gly Val Leu Leu Gln Ile Phe Thr Lys Pro Val Gly Asp Arg Pro Thr  
                  165                 170                 175  
 Phe Phe Leu Glu Met Ile Gln Arg Ile Gly Cys Met Glu Lys Asp Glu  
                  180                 185                 190  
 Ser Gly Gln Glu Tyr Gln Lys Gly Gly Cys Gly Gly Phe Gly Lys Gly  
           195                 200                 205  
 Asn Phe Ser Glu Leu Phe Lys Ser Ile Glu Glu Tyr Glu Lys Ser Leu  
       210                 215                 220  
 Glu Ala Lys Gln Ala Pro Thr Val Gln Gly Ser  
   225                 230                 235

<210> 35  
 <211> 1550  
 <212> DNA  
 <213> Glycine max

<400> 35  
 tcacaccaca ccaatgccaa tacccatgtg caacgaaatt caagcccaag cccaagccca 60  
 agcccaagcc caacctgggt ttaagctcgt cggtttcaaa aacttcgtcc gaaccaatcc 120  
 taagtccgac cgctttcaag tcaaccgctt ccaccacatc gagttctggt gcaccgatgc 180  
 caccaacgcc tctcgccgat tctcttgggg acttggaatg cctattgtgg caaaatctga 240  
 tctctccacc ggaacacaaa tccacgcctc ctacctctc cgctccggcg acctctcctt 300  
 cctcttctcc gctccttact ctccctctct ctccgccggc tcctccgctg cctcctccgc 360  
 ctccattccc agtttcgacg ccgccacctg ccttgccttc gctgccaaac acggcttcgg 420  
 cgtccgcgcc atcgcccttg aagtcgccga cgcggaagcc gctttcagcg ccagcgtcgc 480  
 gaaaggagcc gagccggcgt cgcgcgcggt tctcgtcgac gatcgaccg gcttcgcgga 540  
 ggtgcgcctc tacggcgacg tgggtgctccg ctacgtcagc tacaaggacg ccgcgcgcga 600  
 ggcgccacac gcagatccgt cgcgggtggt cctgccggga ttcgaggcgc cggcgtcgtc 660  
 gtcttcggtt ccggagctgg actacgggat ccggcggctg gaccacgcgc tcgggaacgt 720

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tccggagctg ggcggggcgg tgaggtacct gaaaggcttc agcggattcc acgagttcgc 780
ggagttcacc gcggaggacg tgggaacgag cgagagcggg ttgaactcgg tggttctggc 840
gaacaactcg gagacggtgt tgctgccgct gaacgagccg gtttacggaa cgaagaggaa 900
gagccagatt gagacgtatt tggaacacaa cgaagggtgct ggtgtgcagc accttgcgct 960
tgttactcac gacatcttca ccacactgag agagatgaga aagcgaagtt tccttggtgg 1020
at ttgagttc atgccttctc ctctcccac ctattacgcc aacctccaca accgtgccgc 1080
tgatgtgttg accgttgacc agattaagca gtgtgaggag cttgggattc ttgttgacag 1140
agatgatcag ggcactctgc ttcagatttt caccaagcct gttggggaca ggccaacgat 1200
attcatagag ataattcaga ggatcgggtg catggtggag gatgaggaag ggaagggtgta 1260
ccagaagggt gcatgtgggg gttttgggaa aggcaatttt tctgagcttt tcaaattccat 1320
tgaagaatat gagaagactt tggaagctaa aagaaccgcg taagcacatt ggaagaacac 1380
aaatactcct ttgttgaaat gattaatgag gaatcaatgt ggcatagggt gtttatactc 1440
tataatacat agaattacaa tgatagtgtc ctcccttgta tgaaaatgaa atcacagaaa 1500
cttttatgga tagtattttt ctattaaaaa aaaaaaaaaa aaaaaaaaaa 1550

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<210> 36
<211> 449
<212> PRT
<213> Glycine max

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<400> 36
Met Pro Ile Pro Met Cys Asn Glu Ile Gln Ala Gln Ala Gln Ala Gln
  1              5              10              15

Ala Gln Ala Gln Pro Gly Phe Lys Leu Val Gly Phe Lys Asn Phe Val
      20              25              30

Arg Thr Asn Pro Lys Ser Asp Arg Phe Gln Val Asn Arg Phe His His
      35              40              45

Ile Glu Phe Trp Cys Thr Asp Ala Thr Asn Ala Ser Arg Arg Phe Ser
      50              55              60

Trp Gly Leu Gly Met Pro Ile Val Ala Lys Ser Asp Leu Ser Thr Gly
      65              70              75              80

Asn Gln Ile His Ala Ser Tyr Leu Leu Arg Ser Gly Asp Leu Ser Phe
      85              90              95

Leu Phe Ser Ala Pro Tyr Ser Pro Ser Leu Ser Ala Gly Ser Ser Ala
      100              105              110

Ala Ser Ser Ala Ser Ile Pro Ser Phe Asp Ala Ala Thr Cys Leu Ala
      115              120              125

Phe Ala Ala Lys His Gly Phe Gly Val Arg Ala Ile Ala Leu Glu Val
      130              135              140

Ala Asp Ala Glu Ala Ala Phe Ser Ala Ser Val Ala Lys Gly Ala Glu
      145              150              155              160

Pro Ala Ser Pro Pro Val Leu Val Asp Asp Arg Thr Gly Phe Ala Glu
      165              170              175

Val Arg Leu Tyr Gly Asp Val Val Leu Arg Tyr Val Ser Tyr Lys Asp
      180              185              190

Ala Ala Pro Gln Ala Pro His Ala Asp Pro Ser Arg Trp Phe Leu Pro
      195              200              205

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Gly Phe Glu Ala Ala Ala Ser Ser Ser Ser Phe Pro Glu Leu Asp Tyr  
 210 215 220  
 Gly Ile Arg Arg Leu Asp His Ala Val Gly Asn Val Pro Glu Leu Ala  
 225 230 235 240  
 Pro Ala Val Arg Tyr Leu Lys Gly Phe Ser Gly Phe His Glu Phe Ala  
 245 250 255  
 Glu Phe Thr Ala Glu Asp Val Gly Thr Ser Glu Ser Gly Leu Asn Ser  
 260 265 270  
 Val Val Leu Ala Asn Asn Ser Glu Thr Val Leu Leu Pro Leu Asn Glu  
 275 280 285  
 Pro Val Tyr Gly Thr Lys Arg Lys Ser Gln Ile Glu Thr Tyr Leu Glu  
 290 295 300  
 His Asn Glu Gly Ala Gly Val Gln His Leu Ala Leu Val Thr His Asp  
 305 310 315 320  
 Ile Phe Thr Thr Leu Arg Glu Met Arg Lys Arg Ser Phe Leu Gly Gly  
 325 330 335  
 Phe Glu Phe Met Pro Ser Pro Pro Pro Thr Tyr Tyr Ala Asn Leu His  
 340 345 350  
 Asn Arg Ala Ala Asp Val Leu Thr Val Asp Gln Ile Lys Gln Cys Glu  
 355 360 365  
 Glu Leu Gly Ile Leu Val Asp Arg Asp Asp Gln Gly Thr Leu Leu Gln  
 370 375 380  
 Ile Phe Thr Lys Pro Val Gly Asp Arg Pro Thr Ile Phe Ile Glu Ile  
 385 390 395 400  
 Ile Gln Arg Ile Gly Cys Met Val Glu Asp Glu Glu Gly Lys Val Tyr  
 405 410 415  
 Gln Lys Gly Ala Cys Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu  
 420 425 430  
 Phe Lys Ser Ile Glu Glu Tyr Glu Lys Thr Leu Glu Ala Lys Arg Thr  
 435 440 445

Ala

<210> 37  
 <211> 1614  
 <212> DNA  
 <213> Triticum aestivum

<400> 37  
 gcacgagcaa gaagcgaaca cacaccatgc cgccaccccc caccaccccc gcagccaccg 60  
 gcgccgccgc ggtgacgccg gagcacgccg ggccgcgccg aatggtccgc ttcaacccgc 120  
 gcagcgaccg cttccacacg ctgccttcc accacgtcga gttctggtgc gcggacgccg 180  
 cctccgccgc cggcgcgttc gccttcgcgc tcggcgcgcc gctcgcgccg aggtccgacc 240  
 tctccacggg gaactccgtg caccctccc agctgctccg ctcgggcaac ctgccttcc 300  
 tcttcacggc cccctacgcc aacggctgcg acgcccgcac cgctccctg cctccttct 360

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ccgccgacgc cgcgcgccag ttctccgcgc accacggcct cgcggtgcgc tccatagcgc 420
tgcgcgtcgc ggacgctgcc gaggccttcc ggcgcagcgt cgacgggggc gcgcgcccgc 480
ccttcagccc tgtggacctc ggccgcggct tcggcttcgc ggaggtcgag ctctacggcg 540
acgtcgtgct ccgcttcgtc agccacccgc acggcaggga cgtgcccttc ttgcgggggt 600
tcgagggcgt gagcaaccca gacgccgtgg actacggcct gacgcggttc gaccacgtcg 660
tcggcaacgt cccggagctt gccccgcgc cgccctacgt cgccgggttc acgggggttc 720
acgagttcgc cgagttcacg acggaggacg tgggcacggc cgagagcggg ctcaactcga 780
tggtgctcgc caacaactcg gagggcgtgc tgctgccgct caacgagccg gtgcacggca 840
ccaagcgccg gagccagata cagacgttcc tggaacacca cggcggtcgc ggcgtgcagc 900
acatcgcggt ggccagcagc gacgtgctca ggacgctcag ggagatgcgt gcgcgctccg 960
ccatgggccc cttcgacttc ctgccacccc cgctgccgaa gtactacgaa ggcgtgcggc 1020
gcatcgccgc ggatgtgctc tcggaggcgc agatcaagga atgccaggag ctgggggtgc 1080
tcgtcgacag ggacgaccaa ggggtgttgc tacaatctt caccaagcca gtaggggaca 1140
ggccgacgtt gttcctggag atgatccaga ggatcgggtg catggagaag gacgagagag 1200
gggaagagta ccagaagggg ggctgcggcg ggttcggcaa aggcaacttc tccgagctgt 1260
tcaagtccat tgaagattac gagaagtccc ttgaagccaa gcaatctgct gcagttcagg 1320
gatcatagga tagaagctgg agctggagga gctgatccag tactttgtat caggtctcat 1380
ggagcaaaaag aaaatgatgt tgtttgtaag atgcggcgcg caattatgtc cgatgttata 1440
attggtgaag ctgaagacag atgtatccta tgtatgatgg gtgtaataga tggtagaggg 1500
ggctcggctc acacatgaac aaaatgtact gttggcattg ttgtataatc ttgcttgcga 1560
gtaaaataaa gaagaaccga ttttgagttc tgcacaaaaa aaaaaaaaaa aaaa 1614

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<210> 38
<211> 433
<212> PRT
<213> Triticum aestivum

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<400> 38
Met Pro Pro Thr Pro Thr Thr Pro Ala Ala Thr Gly Ala Ala Ala Val
1 5 10 15
Thr Pro Glu His Ala Arg Pro Arg Arg Met Val Arg Phe Asn Pro Arg
20 25 30
Ser Asp Arg Phe His Thr Leu Ala Phe His His Val Glu Phe Trp Cys
35 40 45
Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala Leu Gly Ala
50 55 60
Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser Val His Ala
65 70 75 80
Ser Gln Leu Leu Arg Ser Gly Asn Leu Ala Phe Leu Phe Thr Ala Pro
85 90 95
Tyr Ala Asn Gly Cys Asp Ala Ala Thr Ala Ser Leu Pro Ser Phe Ser
100 105 110
Ala Asp Ala Ala Arg Gln Phe Ser Ala Asp His Gly Leu Ala Val Arg
115 120 125
Ser Ile Ala Leu Arg Val Ala Asp Ala Ala Glu Ala Phe Arg Ala Ser
130 135 140
Val Asp Gly Gly Ala Arg Pro Ala Phe Ser Pro Val Asp Leu Gly Arg
145 150 155 160
Gly Phe Gly Phe Ala Glu Val Glu Leu Tyr Gly Asp Val Val Leu Arg
165 170 175

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Phe Val Ser His Pro Asp Gly Arg Asp Val Pro Phe Leu Pro Gly Phe  
180 185 190  
Glu Gly Val Ser Asn Pro Asp Ala Val Asp Tyr Gly Leu Thr Arg Phe  
195 200 205  
Asp His Val Val Gly Asn Val Pro Glu Leu Ala Pro Ala Ala Ala Tyr  
210 215 220  
Val Ala Gly Phe Thr Gly Phe His Glu Phe Ala Glu Phe Thr Thr Glu  
225 230 235 240  
Asp Val Gly Thr Ala Glu Ser Gly Leu Asn Ser Met Val Leu Ala Asn  
245 250 255  
Asn Ser Glu Gly Val Leu Leu Pro Leu Asn Glu Pro Val His Gly Thr  
260 265 270  
Lys Arg Arg Ser Gln Ile Gln Thr Phe Leu Glu His His Gly Gly Ser  
275 280 285  
Gly Val Gln His Ile Ala Val Ala Ser Ser Asp Val Leu Arg Thr Leu  
290 295 300  
Arg Glu Met Arg Ala Arg Ser Ala Met Gly Gly Phe Asp Phe Leu Pro  
305 310 315 320  
Pro Pro Leu Pro Lys Tyr Tyr Glu Gly Val Arg Arg Ile Ala Gly Asp  
325 330 335  
Val Leu Ser Glu Ala Gln Ile Lys Glu Cys Gln Glu Leu Gly Val Leu  
340 345 350  
Val Asp Arg Asp Asp Gln Gly Val Leu Leu Gln Ile Phe Thr Lys Pro  
355 360 365  
Val Gly Asp Arg Pro Thr Leu Phe Leu Glu Met Ile Gln Arg Ile Gly  
370 375 380  
Cys Met Glu Lys Asp Glu Arg Gly Glu Glu Tyr Gln Lys Gly Gly Cys  
385 390 395 400  
Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu Phe Lys Ser Ile Glu  
405 410 415  
Asp Tyr Glu Lys Ser Leu Glu Ala Lys Gln Ser Ala Ala Val Gln Gly  
420 425 430

Ser

<210> 39  
<211> 317  
<212> PRT  
<213> Synechocystis sp.

<400> 39  
Met Val Tyr His Val Arg Pro Lys His Ala Leu Phe Leu Ala Phe Tyr  
1 5 10 15

Cys	Tyr	Phe	Ser	Leu	Leu	Thr	Met	Ala	Ser	Ala	Thr	Ile	Ala	Ser	Ala	
			20					25					30			
Asp	Leu	Tyr	Glu	Lys	Ile	Lys	Asn	Phe	Tyr	Asp	Asp	Ser	Ser	Gly	Leu	
		35					40					45				
Trp	Glu	Asp	Val	Trp	Gly	Glu	His	Met	His	His	Gly	Tyr	Tyr	Gly	Pro	
	50					55					60					
His	Gly	Thr	Tyr	Arg	Ile	Asp	Arg	Arg	Gln	Ala	Gln	Ile	Asp	Leu	Ile	
65					70					75					80	
Lys	Glu	Leu	Leu	Ala	Trp	Ala	Val	Pro	Gln	Asn	Ser	Ala	Lys	Pro	Arg	
				85					90					95		
Lys	Ile	Leu	Asp	Leu	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Leu	Tyr	Leu	
			100					105					110			
Ala	Gln	Gln	His	Gln	Ala	Glu	Val	Met	Gly	Ala	Ser	Leu	Ser	Pro	Val	
		115					120					125				
Gln	Val	Glu	Arg	Ala	Gly	Glu	Arg	Ala	Arg	Ala	Leu	Gly	Leu	Gly	Ser	
	130					135					140					
Thr	Cys	Gln	Phe	Gln	Val	Ala	Asn	Ala	Leu	Asp	Leu	Pro	Phe	Ala	Ser	
145					150					155					160	
Asp	Ser	Phe	Asp	Trp	Val	Trp	Ser	Leu	Glu	Ser	Gly	Glu	His	Met	Pro	
				165					170					175		
Asn	Lys	Ala	Gln	Phe	Leu	Gln	Glu	Ala	Trp	Arg	Val	Leu	Lys	Pro	Gly	
			180					185					190			
Gly	Arg	Leu	Ile	Leu	Ala	Thr	Trp	Cys	His	Arg	Pro	Ile	Asp	Pro	Gly	
		195					200					205				
Asn	Gly	Pro	Leu	Thr	Ala	Asp	Glu	Arg	Arg	His	Leu	Gln	Ala	Ile	Tyr	
	210					215					220					
Asp	Val	Tyr	Cys	Leu	Pro	Tyr	Val	Val	Ser	Leu	Pro	Asp	Tyr	Glu	Ala	
225					230					235					240	
Ile	Ala	Arg	Glu	Cys	Gly	Phe	Gly	Glu	Ile	Lys	Thr	Ala	Asp	Trp	Ser	
				245					250					255		
Val	Ala	Val	Ala	Pro	Phe	Trp	Asp	Arg	Val	Ile	Glu	Ser	Ala	Phe	Asp	
			260					265					270			
Pro	Arg	Val	Leu	Trp	Ala	Leu	Gly	Gln	Ala	Gly	Pro	Lys	Ile	Ile	Asn	
		275					280					285				
Ala	Ala	Leu	Cys	Leu	Arg	Leu	Met	Lys	Trp	Gly	Tyr	Glu	Arg	Gly	Leu	
	290					295					300					
Val	Arg	Phe	Gly	Leu	Leu	Thr	Gly	Ile	Lys	Pro	Leu	Val				
305					310					315						

<210> 40  
<211> 348

<212> PRT

<213> Arabidopsis thaliana

<400> 40

Met	Lys	Ala	Thr	Leu	Ala	Ala	Pro	Ser	Ser	Leu	Thr	Ser	Leu	Pro	Tyr	
1				5					10					15		
Arg	Thr	Asn	Ser	Ser	Phe	Gly	Ser	Lys	Ser	Ser	Leu	Leu	Phe	Arg	Ser	
			20					25					30			
Pro	Ser	Ser	Ser	Ser	Ser	Val	Ser	Met	Thr	Thr	Thr	Arg	Gly	Asn	Val	
			35				40					45				
Ala	Val	Ala	Ala	Ala	Ala	Thr	Ser	Thr	Glu	Ala	Leu	Arg	Lys	Gly	Ile	
	50					55					60					
Ala	Glu	Phe	Tyr	Asn	Glu	Thr	Ser	Gly	Leu	Trp	Glu	Glu	Ile	Trp	Gly	
65					70				75						80	
Asp	His	Met	His	His	Gly	Phe	Tyr	Asp	Pro	Asp	Ser	Ser	Val	Gln	Leu	
				85				90						95		
Ser	Asp	Ser	Gly	His	Lys	Glu	Ala	Gln	Ile	Arg	Met	Ile	Glu	Glu	Ser	
			100					105					110			
Leu	Arg	Phe	Ala	Gly	Val	Thr	Asp	Glu	Glu	Glu	Glu	Lys	Lys	Ile	Lys	
		115					120					125				
Lys	Val	Val	Asp	Val	Gly	Cys	Gly	Ile	Gly	Gly	Ser	Ser	Arg	Tyr	Leu	
	130					135					140					
Ala	Ser	Lys	Phe	Gly	Ala	Glu	Cys	Ile	Gly	Ile	Thr	Leu	Ser	Pro	Val	
145					150					155					160	
Gln	Ala	Lys	Arg	Ala	Asn	Asp	Leu	Ala	Ala	Ala	Gln	Ser	Leu	Ser	His	
				165				170						175		
Lys	Ala	Ser	Phe	Gln	Val	Ala	Asp	Ala	Leu	Asp	Gln	Pro	Phe	Glu	Asp	
			180					185					190			
Gly	Lys	Phe	Asp	Leu	Val	Trp	Ser	Met	Glu	Ser	Gly	Glu	His	Met	Pro	
		195					200					205				
Asp	Lys	Ala	Lys	Phe	Val	Lys	Glu	Leu	Val	Arg	Val	Ala	Ala	Pro	Gly	
	210					215					220					
Gly	Arg	Ile	Ile	Ile	Val	Thr	Trp	Cys	His	Arg	Asn	Leu	Ser	Ala	Gly	
225					230					235					240	
Glu	Glu	Ala	Leu	Gln	Pro	Trp	Glu	Gln	Asn	Ile	Leu	Asp	Lys	Ile	Cys	
				245					250					255		
Lys	Thr	Phe	Tyr	Leu	Pro	Ala	Trp	Cys	Ser	Thr	Asp	Asp	Tyr	Val	Asn	
			260					265					270			
Leu	Leu	Gln	Ser	His	Ser	Leu	Gln	Asp	Ile	Lys	Cys	Ala	Asp	Trp	Ser	
		275					280					285				
Glu	Asn	Val	Ala	Pro	Phe	Trp	Pro	Ala	Val	Ile	Arg	Thr	Ala	Leu	Thr	
	290					295					300					

Trp Lys Gly Leu Val Ser Leu Leu Arg Ser Gly Met Lys Ser Ile Lys  
305 310 315 320

Gly Ala Leu Thr Met Pro Leu Met Ile Glu Gly Tyr Lys Lys Gly Val  
325 330 335

Ile Lys Phe Gly Ile Ile Thr Cys Gln Lys Pro Leu  
340 345

<210> 41

<211> 434

<212> PRT

<213> Hordeum vulgare

<400> 41

Met Pro Pro Thr Pro Thr Thr Pro Ala Ala Thr Gly Ala Ala Ala Ala  
1 5 10 15

Val Thr Pro Glu His Ala Arg Pro His Arg Met Val Arg Phe Asn Pro  
20 25 30

Arg Ser Asp Arg Phe His Thr Leu Ser Phe His His Val Glu Phe Trp  
35 40 45

Cys Ala Asp Ala Ala Ser Ala Ala Gly Arg Phe Ala Phe Ala Leu Gly  
50 55 60

Ala Pro Leu Ala Ala Arg Ser Asp Leu Ser Thr Gly Asn Ser Ala His  
65 70 75 80

Ala Ser Gln Leu Leu Arg Ser Gly Ser Leu Ala Phe Leu Phe Thr Ala  
85 90 95

Pro Tyr Ala Asn Gly Cys Asp Ala Ala Thr Ala Ser Leu Pro Ser Phe  
100 105 110

Ser Ala Asp Ala Ala Arg Arg Phe Ser Ala Asp His Gly Ile Ala Val  
115 120 125

Arg Ser Val Ala Leu Arg Val Ala Asp Ala Ala Glu Ala Phe Arg Ala  
130 135 140

Ser Arg Arg Arg Gly Ala Arg Pro Ala Phe Ala Pro Val Asp Leu Gly  
145 150 155 160

Arg Gly Phe Ala Phe Ala Glu Val Glu Leu Tyr Gly Asp Val Val Leu  
165 170 175

Arg Phe Val Ser His Pro Asp Gly Thr Asp Val Pro Phe Leu Pro Gly  
180 185 190

Phe Glu Gly Val Thr Asn Pro Asp Ala Val Asp Tyr Gly Leu Thr Arg  
195 200 205

Phe Asp His Val Val Gly Asn Val Pro Glu Leu Ala Pro Ala Ala Ala  
210 215 220

Tyr Ile Ala Gly Phe Thr Gly Phe His Glu Phe Ala Glu Phe Thr Ala  
225 230 235 240

Glu Asp Val Gly Thr Thr Glu Ser Gly Leu Asn Ser Val Val Leu Ala  
 245 250 255  
 Asn Asn Ser Glu Gly Val Leu Leu Pro Leu Asn Glu Pro Val His Gly  
 260 265 270  
 Thr Lys Arg Arg Ser Gln Ile Gln Thr Phe Leu Glu His His Gly Gly  
 275 280 285  
 Pro Gly Val Gln His Ile Ala Val Ala Ser Ser Asp Val Leu Arg Thr  
 290 295 300  
 Leu Arg Lys Met Arg Ala Arg Ser Ala Met Gly Gly Phe Asp Phe Leu  
 305 310 315 320  
 Pro Pro Pro Leu Pro Lys Tyr Tyr Glu Gly Val Arg Arg Leu Ala Gly  
 325 330 335  
 Asp Val Leu Ser Glu Ala Gln Ile Lys Glu Cys Gln Glu Leu Gly Val  
 340 345 350  
 Leu Val Asp Arg Asp Asp Gln Gly Val Leu Leu Gln Ile Phe Thr Lys  
 355 360 365  
 Pro Val Gly Asp Arg Pro Thr Leu Phe Leu Glu Met Ile Gln Arg Ile  
 370 375 380  
 Gly Cys Met Glu Lys Asp Glu Arg Gly Glu Glu Tyr Gln Lys Gly Gly  
 385 390 395 400  
 Cys Gly Gly Phe Gly Lys Gly Asn Phe Ser Glu Leu Phe Lys Ser Ile  
 405 410 415  
 Glu Asp Tyr Glu Lys Ser Leu Glu Ala Lys Gln Ser Ala Ala Val Gln  
 420 425 430

Gly Ser

<210> 42  
 <211> 442  
 <212> PRT  
 <213> Daucus carota

<400> 42  
 Met Gly Lys Lys Gln Ser Glu Ala Glu Ile Leu Ser Ser Asn Ser Ser  
 1 5 10 15  
 Asn Thr Ser Pro Ala Thr Phe Lys Leu Val Gly Phe Asn Asn Phe Val  
 20 25 30  
 Arg Ala Asn Pro Lys Ser Asp His Phe Ala Val Lys Arg Phe His His  
 35 40 45  
 Ile Glu Phe Trp Cys Gly Asp Ala Thr Asn Thr Ser Arg Arg Phe Ser  
 50 55 60  
 Trp Gly Leu Gly Met Pro Leu Val Ala Lys Ser Asp Leu Ser Thr Gly  
 65 70 75 80





Gly Gln Met Tyr Gln Lys Gly Gly Cys Gly Gly Phe Gly Lys Gly Asn  
 405 410 415  
 Phe Ser Glu Leu Phe Lys Ser Ile Glu Glu Tyr Glu Lys Thr Leu Glu  
 420 425 430  
 Ala Lys Gln Ile Thr Gly Ser Ala Ala Ala  
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 Ser Trp Gly Leu Gly Met Arg Phe Ser Ala Lys Ser Asp Leu Ser Thr  
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 Phe Leu Phe Thr Ala Pro Tyr Ser Pro Ser Leu Ser Ala Gly Glu Ile  
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 Arg Ser Phe Phe Ser Ser His Gly Leu Gly Val Arg Ala Val Ala Ile  
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 Ala Glu Val Lys Leu Tyr Gly Asp Val Val Leu Arg Tyr Val Ser Tyr  
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 Lys Ala Glu Asp Thr Glu Lys Ser Glu Phe Leu Pro Gly Phe Glu Arg  
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 Val Glu Asp Ala Ser Ser Phe Pro Leu Asp Tyr Gly Ile Arg Arg Leu  
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 Asp His Ala Val Gly Asn Val Pro Glu Leu Gly Pro Ala Leu Thr Tyr  
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Val Ala Gly Phe Thr Gly Phe His Gln Phe Ala Glu Phe Thr Ala Asp  
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 Asp Val Gly Thr Ala Glu Ser Gly Leu Asn Ser Ala Val Leu Ala Ser  
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 Asn Asp Glu Met Val Leu Leu Pro Ile Asn Glu Pro Val His Gly Thr  
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 Ser Pro Pro Pro Thr Tyr Tyr Gln Asn Leu Lys Lys Arg Val Gly Asp  
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 Cys Met Met Lys Asp Glu Glu Gly Lys Ala Tyr Gln Ser Gly Gly Cys  
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